

Listing of the Claims:

Please cancel claims 1-45.

46. (New) A method of making an interposer, comprising:

forming an oxide layer on each of a first surface and a second surface of a substrate;

patterning the oxide layer of the first surface to expose a first portion and a second portion of the substrate;

isotropically etching through the first portion of the exposed substrate to form a first portion of at least one deep-via opening;

anisotropically etching through the second portion of the exposed substrate to form a second portion of the at least one deep-via opening;

sputtering a copper barrier layer and a copper seed layer into the first and second portions of the at least one deep-via opening;

electroplating a conductive material over the seed layer to form the at least one deep-via; and

forming vias and interconnect lines over the second surface of the substrate.

47. (New) The method of claim 46 wherein the interconnect lines are electrically coupled to the at least one deep-via.

48. (New) The method of claim 46 wherein the oxide layer is thermally grown to a thickness of approximately 0.5 μ .

49. (New) The method of claim 46 further growing an oxide layer on inner surfaces of the at least deep-via opening prior to the sputtering the copper barrier and the copper seed layer.

50. (New) The method of claim 46 wherein the copper barrier layer is of a thickness in a range of 10-50 nm.

51. (New) The method of claim 46 wherein the copper seed layer layer is of a thickness in a range of 100-300 nm.

52. (New) The method of claim 46 further comprising depositing a copper layer over the first surface of the substrate.

53. (New) The method of claim 46 further comprising:

forming a silicon nitride layer over the second surface of the substrate;

depositing an oxide layer superjacent to the silicon nitride layer;

patterning the oxide layer to expose portions of the silicon nitride layer;

etching the exposed portions of the silicon nitride layer;

depositing a copper barrier layer and a copper seed layer over the second surface of the substrate; and

electroplating a conductive material over the copper seed layer.

54. (New) A method of making an interposer comprising:

forming a first set of interconnect lines over a first surface of a substrate;

forming a second set of interconnect lines over the first surface of the substrate;
and

forming vias between the first set of interconnect lines and the second set of interconnect lines, wherein the vias are formed with slopped sidewalls, the method further comprising:

forming a first oxide layer on a first surface of a substrate and a second oxide layer on a second surface of the substrate;

forming a first silicon nitride layer superjacent to the first oxide layer;
patterning the first silicon nitride layer to expose portions of the first silicon nitride layer;

etching the exposed portions of the first silicon nitride layer to form trenches;

sputtering a copper barrier layer and a copper seed layer over the first surface of the substrate;

electroplating a conductive material over the copper seed layer;

forming interconnect lines over the first surface of the substrate; and
depositing a second silicon nitride layer over the first surface of the substrate.

55. (New) The method of claim 55 further comprising:

patterning the second oxide layer to expose portions of the second oxide layer to be removed to form a deep-via opening with slopped sidewalls;

etching the exposed portions of the second oxide layer to form the deep-via opening;

sputtering a copper barrier layer and a copper seed layer into the deep-via opening; and
electroplating a conductive material over the copper seed layer.